

Using H Bridges as a Motor Controller

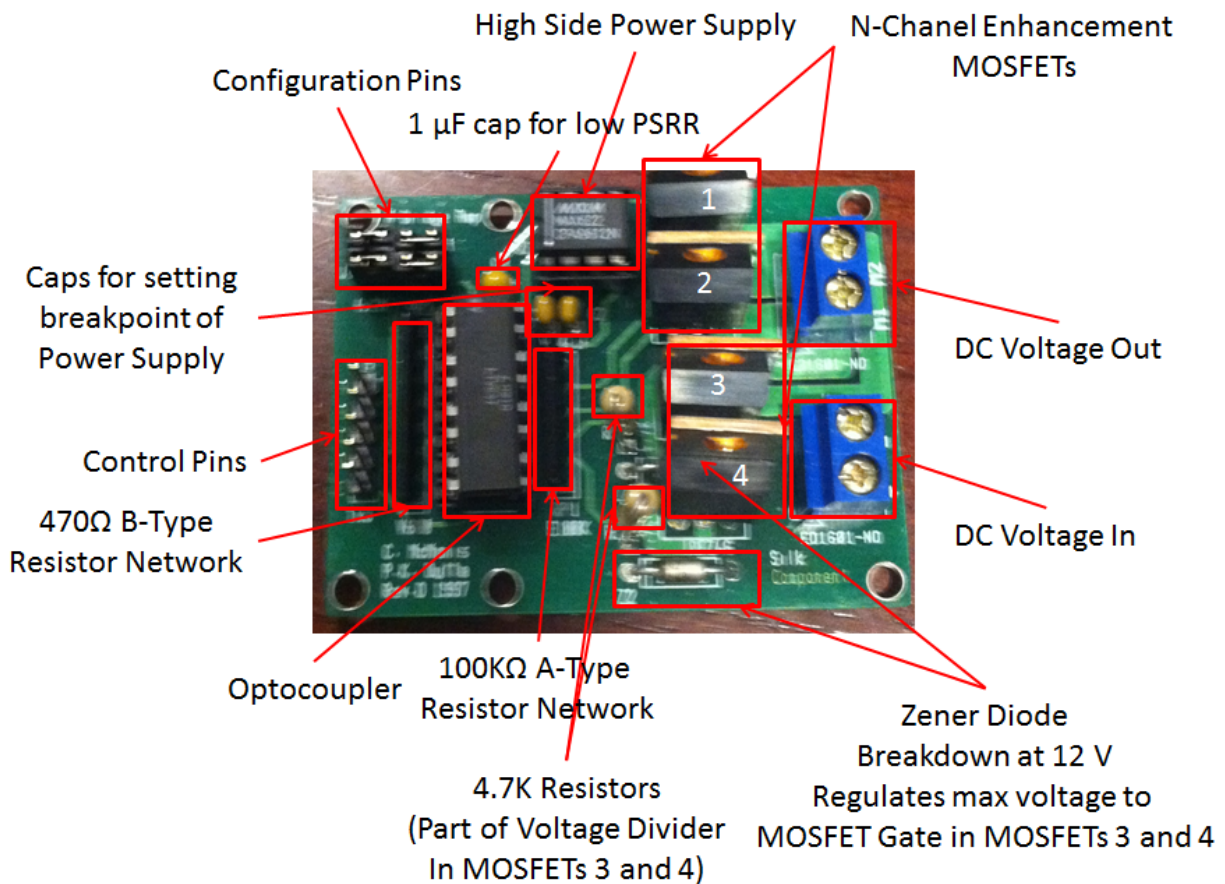
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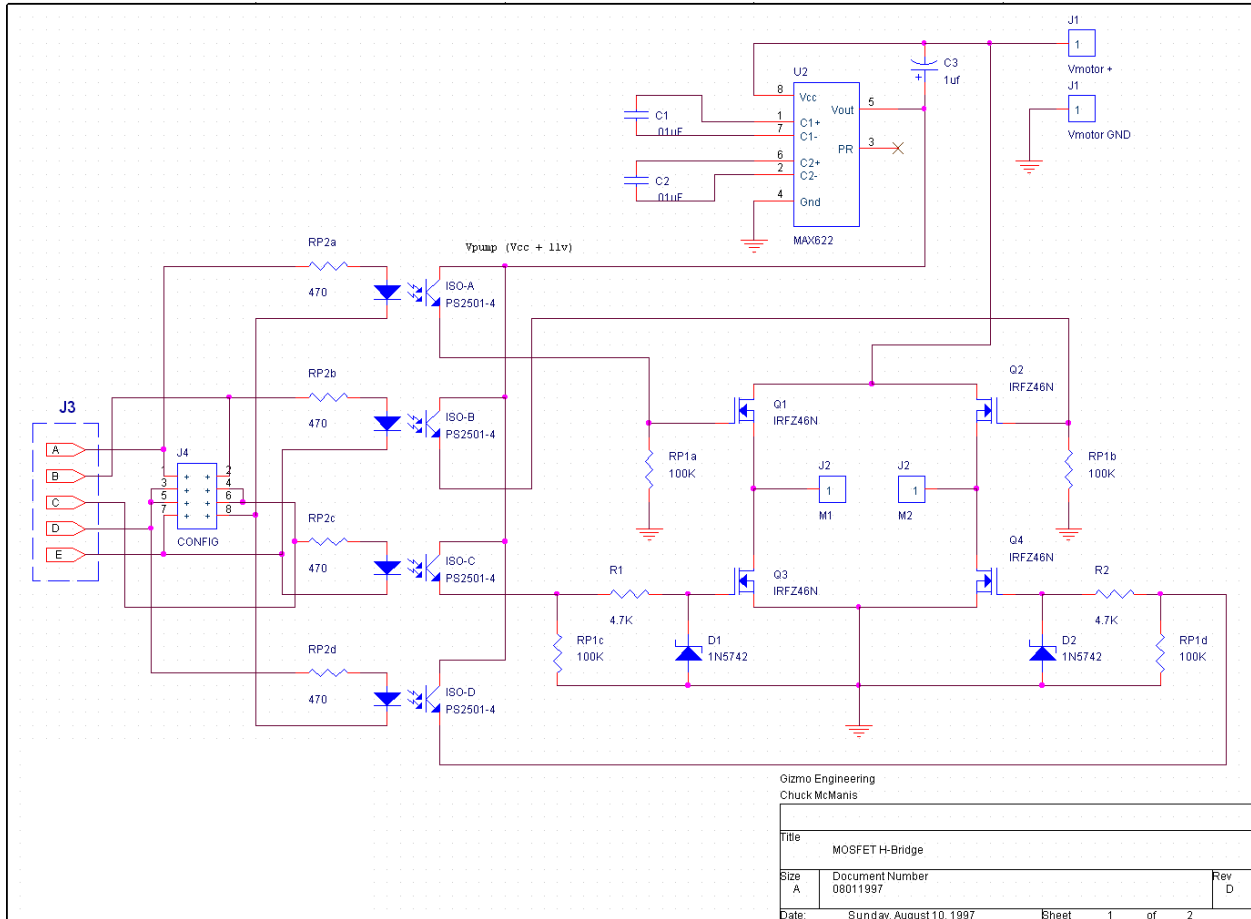
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The H bridge is an interesting circuit which can give you bidirectional control of a motor. The H bridges in the Mechatronics lab are no longer being produced and there is no data sheet. So from what I learned about them while working on my hovercraft, I will try to give a brief overview of the circuitry as well as how to use them.

So for starters, I went through the components used, analyzed the PCB and came up with this:



Below is a Schematic for this particular H Bridge:



MAX622 High Side Power Supply IC:

<http://datasheets.maximintegrated.com/en/ds/MAX622-MAX623.pdf>

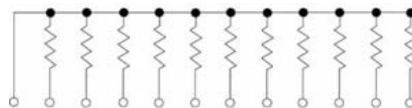
LTV847 Optocoupler: <http://www.jameco.com/Jameco/Products/ProdDS/878286.pdf>

1N4742 Zener Diode: <https://www.futurlec.com/Diodes/1N4742.shtml>

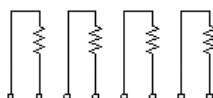
100K (A104G) Resistor Net: http://us.100y.com.tw/pdf_file/DIP-R-N.pdf

The resistor network on the left, is obsolete and I cannot find any datasheets, however it has the marking B471J. The B means that the resistors are isolated from each other. I am assuming that the 471 translates to $47 \cdot 10^1 = 470$ ohm resistors. J probably has to do with package type, tolerance or power rating.

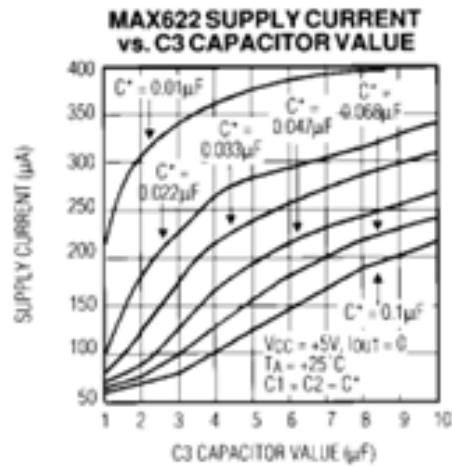
A-Type:



B-Type:



Based on the 1 microfarad capacitor, the supply current should be very linear.



So how do you actually use this particular H-bridge?

The pin labelled:

X1 should be shorted to X2

X3 should be shorted to Y1

The pin below X1 should be shorted to the one below X2

The pin below X3 should be shorted to the one below Y1

You can now use the H-bridge from the pins marked A and B in J4 or Control Pins in my diagram. If you hold pin A at 5V and pin B goes to ground, the motor will turn on in one direction. If you switch the signals in A and B, it will spin the other way. Alternatively, if the signals are the same, you can shut off the motor.